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Signature J. Powell

Date 4th May 1999

The invention relates to a display module, preferably to be fastened to a pole, for a bus or tram stop, for example, without being restricted to this application. The display modules according to the invention may also provide other information, such as details on companies and authorities accommodated in a building, or be used as signposts, for example. The display module may, for example, also be fastened to a wall or be a self-supporting column.

The display modules of the type under consideration usually consist of plane sheet metal elements which are either painted or printed with information or - formed as frames - comprise films with information. If flat display modules of this kind are fastened to a pole, they are usually kept fairly small, so that the information can only be read at close range. As they have to withstand high wind loads, large-area display modules are not usually fastened to a pole for reasons of strength, being instead screwed into a frame which gives the display modules the necessary stability. The frame is in this case frequently provided for a predetermined number of display modules which can only be enlarged by replacing the existing frame by a new one of a different size.

EP 0 422 722 A1 discloses a display device consisting of two shaped halves which have a cylindrical shape when assembled. The display device is rotatably seated on two bearings which are fastened to the pole.

EP 0 608 486 A1 discloses a facility for presenting information in which two information faces are clamped between boundary side elements such that the information faces are vaulted. The boundary side elements are connected via webs to sleeve-shaped elements in which two poles can be held.

The object of the invention is to present a display module

of the type under consideration which can be easily fastened to the pole and forms with the latter a stable unit which also withstands high wind loads.

This object is solved according to the invention by the features presented in the characterising part of claim 1.

Advantageous developments of the invention are characterised in the subclaims.

The display module according to the invention comprises two module half-shells which are assembled to form a body with two opposite, convexly curved external faces, wherein the module half-shells hold the pole between them, the latter extending centrally through the display module. The module half-shells are preferably screwed together.

The convex form of the display module, which overall is approximately lenticular in horizontal section, results in a considerable reduction in dynamic wind pressure, thereby substantially increasing the stability of a pole preferably provided with a plurality of display modules. It is therefore possible to fasten display modules according to the invention of a substantial size to a relatively slender pole without this requiring such a complex pole guying system as would be necessary in the case of plane display modules. The slightly curved external faces of the display module, which are preferably curved uniaxially about a vertical axis, are then also easily visible from quite a distance if the observer is not standing in front of the display module, but rather looks at this from an off-centre position, from which flat display elements are hardly discerned.

If the information of a display module of the type under consideration is also to be discernible in darkness, it is known to illuminate the information face of the display

module by an external light source, for example by means of a tubular lamp mounted above or next to the display module. If the display module is in the open, this gives rise to the problem of having to protect the source of illumination against wind and storms, and the possibility of direct deliberate damage is also to be prevented as far as possible. The measures to be taken for this purpose are complex and generally impair the external appearance of the display module.

In a further development of the invention the display module according to the invention may comprise a light guide plate of which at least one, preferably two boundary edges can be illuminated by light sources and which has a roughened external face, in front of which an information carrier, preferably a film provided with information, is disposed.

The light guide plate is preferably a transparent acrylic plate whose outside, which faces the observer, has been roughened by etching or sand blasting, for example, as a result of which the light having entered the light guide plate from the side emerges from the roughened external face over the entire area, so that the external face of the semiconductor plate which thus gives off light illuminates the information carrier from the back. The information carrier is preferably a transparent film which is printed in mirror-image fashion on the back and on which, for example, a public transport timetable is reproduced, so that these details appear as black marks on the illuminated information face.

A further development of the invention preferably uses diode strips as the light source, i.e. diodes which are disposed at a small spacing from one another and which can be inserted in grooves which are formed in boundary edges, preferably two lying opposite one another, of the light guide plate. The diode strips may be glued into the grooves

with, for example, a liquid acrylic resin.

It is of course also possible to provide all the boundary edges with diode strips.

The diode strips are connected to a current source, preferably via a switch which can be moved into the ON position by a sensor. This formation has the advantage of the illumination only being switched on when required, so that the current consumed by the illumination can be reduced to a large degree. It is of course also possible, as an alternative, for the illumination to be automatically switched on at a certain time or at dusk, with the possibility of providing an optical sensor in the latter case.

It is in particular of advantage for the illumination to be switched on at the request of a passenger (in the case of a timetable to be displayed) if the current source which is used is an accumulator which is charged by solar cells. The accumulator is in this case appropriately housed inside the display module and electrically connected to the solar cells, which may be mounted at the top of the pole, for example, if the display module is fastened to such a pole, as is appropriate where bus and tram stops are concerned.

The illumination of the display module is therefore independent of the presence of an electrical mains supply, which is not generally available at bus or tram stops.

In a further development of the invention the light guide plate is to be covered by a protective plate on which the film provided with the information lies. The protective plate may consist, for example, of polycarbonate or acrylic.

The cables which connect together the solar cells, the accumulator and the diodes may be routed through the pole,

for example, if the display module(s) is/are fastened to a pole, or extend through plastics tubes mounted inside the display modules.

The illumination of the display module according to the invention is completely insensitive to external atmospheric influences, for example rain. The light guide plate, protective plate and information film arrangement is covered in the boundary regions by boundary strips of the display module or fillets which are clipped or screwed on, so that these components are securely held on the display module, as described in greater detail in the following. The diodes are embedded in grooves in the light guide plate and just as inaccessible from outside as the entire cabling.

In a further development the display module according to the invention comprises two module half-shells, which are assembled to form a body with two opposite, convexly curved external faces, wherein the module half-shells can hold a pole between them, the latter extending centrally through the display module. The module half-shells are preferably screwed together in such a way as to prevent internal stresses from arising in them, so that the occurrence of stress cracks is prevented.

The convex form of the display module, which overall is approximately lenticular in horizontal section, results in a considerable reduction in dynamic wind pressure, thereby greatly increasing the stability of a pole preferably provided with a plurality of display modules. It is therefore possible to fasten display modules according to the invention of a substantial size to a relatively slender pole without this requiring a complex pole guying system, as would be necessary in the case of plane display modules. The slightly curved external faces of the display module, which are preferably curved uniaxially about a vertical axis, are then also easily visible from quite a distance if the

observer is not standing in front of the display module, but rather looks at this from an off-centre position, from which flat display elements are hardly discerned.

The two module half-shells preferably have an identical external shape, so that the display module is of a shape which is symmetrical with respect to its centre plane, without the invention being restricted to this.

When in the fastening position the display module consequently has preferably two opposite wall faces which are curved about a vertical axis and whose radius of curvature is of a magnitude such that the observer can easily read the lettering or marking of the display module when standing in front of the latter. The module half-shells also have plane terminal walls at the top and bottom at the boundary of the convex vertical wall face in the fastening position, which walls extend in rectilinear fashion between the lateral edges and overlap when the display module is in the assembled state, preferably forming a small air gap.

In a particularly preferred embodiment of the invention the display modules are fastened to the pole by means of clamp elements which are screwed together such that they are seated absolutely firmly on the pole. The clamp elements have a locating face for the pole which is approximately semicircular in cross section, i.e. in order to take account of the tolerances occurring with respect to the pole diameters, a small gap, exactly of the desired diameter, remains between the two clamp elements at the pole, so that the latter can be securely tightened even when the pole concerned has a somewhat smaller diameter. In order to compensate for the pole diameter tolerances, it is also possible to form in the internal face of the clamp elements grooves into which a certain kit, for example a so-called "ego" kit, can be introduced, this projecting slightly beyond the internal face of the clamp elements and having

adhesive properties.

Quartz sand projecting partly beyond the plastics material may also be embedded in the locating face of the clamp elements, a measure which gives rise to a particularly high coefficient of friction.

The module half-shells are fastened to the assembled clamp elements by being pushed onto the clamp elements from the side according to a further aspect of the invention. The clamp elements may be slightly shorter than the module half-shells and provided at the top side and the underside with guide and fastening means which co-operate with corresponding guide and fastening means at the inside of each module half-shell. The means in question may be dovetail guides, for example, in which case elongate projections of dovetail cross section may be provided at one of the components and correspondingly shaped grooves in the other, associated component. It is also possible to provide other guide and fastening means for fastening the module half-shells to the internal shell elements in an exactly predetermined aligned position. For example, grooves may extend through the clamp elements, in which grooves pins which are preferably of a hammer head-shaped cross section are inserted, which pins may be moulded onto transverse ribs of the module half-shells.

If the module half-shells are pushed onto the clamp elements from both sides to an extent such that they lie approximately against one another, they are preferably screwed together, as described in detail in the following.

According to a further proposal of the invention, the clamp elements have semicircular collars, which project at the top and bottom and may be of a smaller wall thickness. The collars surround the pole like a tube when two clamp elements are assembled.

A proposal according to a further development of this concept lies in forming, at the boundary of the top and bottom collar, projections and recesses which fit together in mating fashion and which may be staggered such that, when the boundary region of the bottom (or top) collar of a module is inserted in the boundary region of the top (or bottom) collar of a module disposed underneath (or above), the associated clamp elements are exactly aligned with one another, i.e. in line one above the other. The predetermined spacing of the display modules at the pole is also observed exactly through the height of the collars, which are fitted into each other in seamless fashion.

A groove and tongue, spaced apart by 90°, may also be formed at the boundaries of the collars to engage with one another.

Two clamps lying one above the other, (i.e. pairs of clamp elements), which are connected together by webs, may be provided to fasten high display modules.

The collars projecting out of the clamps at the top and bottom may consist of polycarbonate - just like the module half-shells - and in each case be locked into the clamp elements, which in turn may consist of a material which is insusceptible to stress cracks, such as glass-fibre reinforced polypropylene.

The special formation of the clamp elements and the preferred fastening of the module half-shells to the clamp elements, which are firmly screwed to the pole, ensure that the display modules according to the invention can always be fastened to the pole in a torsion-proof manner, even if the pole diameters vary in the order of magnitude of several millimetres. The strictest possible observance of a predetermined spacing between the modules is also guaranteed and that all modules point exactly in the same direction.

In order to enable the module half-shells to be screwed into position, it is also proposed that so-called domes be moulded onto the inside of each half-shell of a display module, which domes comprise an internal thread, for which purpose, for example, metal sleeves with internal threads can be inserted in the domes, and that the respective other half-shell comprise through-holes at points which are in line with the internal threads when the display module is in the assembled state. Guide sleeves for the screws may be moulded on internally in the region of the through-holes, which sleeves extend up to the domes with the internal threads when the module half-shells are assembled and may lock into these, thereby enabling a smooth screwing-in operation to be performed. The through-holes may be closed by means of caps, the external face of which is shaped or vaulted in accordance with the external contour of the module half-shells, so that the caps are practically inconspicuous. Each cap may be provided with a nose, which engages in a recess at the boundary of the through-hole, thereby guaranteeing that the angular position of the caps is exact and the through-holes therefore smoothly closed.

The invention is not restricted to forming the internal thread at the inside of one half-shell and the through-holes for the screws at the other half-shell. A further possibility lies in providing one axial half of each half-shell with domes having internal threads and the other axial half, at mirror-symmetrical points, with through-holes through the external wall, again preferably with internally adjoining guide sleeves, thereby creating the possibility of assembling two identical module half-shells to form a display element. This measure enables the costs for manufacturing and storing the module half-shells to be reduced.

In order to increase the strength of the module half-shells,

it is also proposed that a plurality of partitions be moulded onto the inside of the convex wall parallel and perpendicularly to the top and bottom terminal walls, which partitions may form a square or rectangular grid in a plan view.

The convex walls of the module half-shells lie against one another with their lateral boundaries, and can preferably interlock by means of a groove and tongue. The display element is thus tightly closed substantially all-round when mounted on the pole.

As already mentioned at the outset, a plurality of display modules are mounted one above the other on a pole at public transport stops, with the display element which makes the stop visible over a long distance with an H in a panel of a contrasting colour being located at the highest point. Located below this are further display modules which display the names of the stops, the routing as well as one or more timetables. It is proposed according to the invention that the display modules be disposed at a spacing of at least 20 mm, thereby substantially reducing the dynamic wind pressure exerted on the pole. This in turn significantly reduces the bending moment where the pole emerges from the ground, so that the cross section and base thereof can be smaller and lighter.

The top display module on the pole comprises the prescribed marking for the presence of a public transport stop. This H module must always be mounted transversely to the roadway. In order to exclude the possibility of a collision with an approaching bus, even when the stop pole has to be mounted near the edge of the kerbstone, the H module is fastened to the pole by two clamps provided with two arms which engage laterally in the H module and hold the latter on the side of the pole which is remote from the road.

If the display module is not to display a large-area symbol or the like which remains unchanged for a long time, but rather a plurality of items of information such as timetables, routing details, names of stops, etc. which can be illuminated, it is proposed that grooves be formed in the outside of the convexly curved wall at the top and bottom boundary, in which grooves the boundaries of the above-mentioned light guide plate, the protective plate and the information carrier engage, these being pushed into the display module from one side, so that the two vaulted outsides of the display module are covered by this arrangement. The film which comprises the information to be displayed may be covered by a further transparent film which likewise engages in the boundary grooves. The boundary grooves may be formed by moulding a respective flanged boundary strip onto the top and the bottom boundary of the convex walls.

Once the plates and films have been inserted as far as a lateral stop, which may be formed by a vertical fillet fastened at this point, these are fixed by positioning a further fillet in a removable manner on the vertical boundary, which makes the insertion possible, of the assembled convex walls. This fillet, which preferably snaps on, makes it impossible for the light guide plate and film arrangement to be withdrawn. As a safety measure, it is possible to arrange for a locking nose moulded onto the fillet only to be displaceable into the release position through a hole leading through the fillet by means of an introduced pin or the like.

The display modules according to the invention, which are preferably made of a plastics material such as polycarbonate in an injection moulding process, are extremely robust and withstand all atmospheric influences over a long period. Because of their vaulted form, the dynamic wind pressure which acts on them is greatly reduced, so that they can be

securely held by a relatively thin pole. They can be fastened rapidly and easily, being just as easy to dismount again. Their vaulted shape also makes them visible over a long distance, so that they also indicate the presence of a public transport stop to people a long way away. If the display modules display information on films, these may easily be replaced, e.g. in the case of a timetable alteration.

The external wall of the module half-shells may, for example, have the cross-sectional shape of a circular arc of a large diameter and/or of an elliptical section, with further curved or convexly vaulted shapes lying within the scope of the invention.

The display module illumination according to the invention is weather-resistant and practically maintenance-free without complex measures. The light guide plate is preferably injection moulded from acrylic and has a curvature which corresponds with the vaulted external wall of the module half-shells, i.e. it has in a plan view, for example, the shape of a partial ellipse, a shallow circular arc or a shape combined from these two. Grooves are preferably milled into the right-hand and the left-hand boundary edge of the light guide plates, in which grooves the diode strips are disposed and sealed with liquid acrylic resin. The light guide plate is preferably approximately 8 mm to 10 mm thick. The protective plate which lies against the external face, the latter facing the observer, and which preferably consists of polycarbonate or acrylic, is preferably approximately 2 mm thick, and the timetable, which is printed in transparent fashion, may be formed by an acrylic film of a thickness of approximately 1 mm.

The preferred arrangement in the form of solar-powered illumination does not require a connection to the local electrical mains supply, so that the display modules can be

illuminated at any desired locations in the open.

It is also possible to initially mount the display modules without illumination and fit them with this subsequently if required. For this purpose, instead of being provided with the light guide plate, the vaulted external faces of the display modules may initially be provided with an adapter plate which may consist of an inexpensive material such as polystyrene and have a thickness of approximately 2.5 mm with ribs at the back which increase the overall thickness of the adapter plate to approximately 8 to 10 mm. The labour expenditure involved in subsequently fitting the light guide plate, which then replaces the adapter plate, as well as the protective film and the information film, and in fitting the associated cables, batteries or accumulators is relatively low. The electrical parts of the illumination can easily be housed inside the display modules and fastened to the internal ribs thereof without any problems, while the cables can be routed either through the pole or through plastics ducts which are provided for this purpose and which may be moulded onto the ribs of the module half-shells. The display modules can be subsequently fitted with the solar-powered illumination in a short space of time and without additional costs.

Embodiments of the invention are explained in detail in the following with reference to the drawings, in which:

Figure 1A is a plan view onto a first embodiment of a display module according to the invention, the top terminal wall having been omitted;

Figure 1B is a view of the inside of a module half-shell of the display module according to Figure 1A;

Figure 1C is a view of the outside of a module half-shell of the embodiment according to Figures 1A and 1B;

Figure 2A is a plan view similar to Figure 1A onto another embodiment of the invention;

Figure 2B is an internal view of a module half-shell of the embodiment according to Figure 2A;

Figure 2C is a plan view onto a module half-shell of the embodiment according to Figure 2 with the top terminal wall having been cut away;

Figure 2D is a view of one of the two central transverse walls of the module half-shell;

Figures 3A to 3C represent another embodiment of a display module according to the invention in illustrations corresponding to Figure 2;

Figures 4A to 4C are a side view of, a longitudinal section and a cross section through a lateral fillet which is used in the embodiments of Figures 2 and 3;

Figure 5 is a perspective view of an embodiment of a clamp element;

Figure 6 is a largely diagrammatic view of a module half-shell co-operating with the clamp element according to Figure 5;

Figure 7 is a largely diagrammatic vertical section through the clamp element according to Figure 5 with a module half-shell positioned thereon;

Figure 8 is a purely diagrammatic illustration of two assembled collars of modules disposed one above the other on the pole;

Figures 9A-9C show clamps connected together by webs in different side views and horizontal sections;

Figure 10 is a purely diagrammatic illustration of the top boundary region of the information face illuminated according to the invention and

Figures 11A and 11B show an alternative means of fastening a display module at the pole.

Figure 1A is a plan view onto a display module 1, in which the top wall has been cut away, thus revealing the interior of the display module 1.

The display module 1 consists of two module half-shells 2 and 3, which each have an identically shaped external wall 4, which is curved uniaxially, and a plane terminal wall 5 at the top and bottom (see Figures 2D and 3D).

The module half-shells 2 and 3 are assembled along a circumferential centre line 6, where they interlock with a groove and tongue, for example.

Four domes 7 are moulded onto the module half-shell 3 which is on the left in Figure 1A in the region of the top and bottom boundary, into which domes sleeves 8 with internal threads are inserted. The module half-shell 2 is provided at corresponding points with through-holes 9 through the convex wall 4 and guide sleeves 10, which are moulded on next to these holes and through which screws 11 are inserted, these engaging in the internal threads 8 in order to screw the two module half-shells 2, 3 together.

Approximately semicircular locating faces 12 are - as shown more clearly by Figures 2C and 3C - the internal faces of a separately manufactured internal shell element 13, which in this embodiment engages via lateral lugs 14 in recesses 15

of side walls 16 provided to reinforce the module half-shells.

The locating faces 12 of the internal shell elements 13 are preferably provided with quartz sand, which is partly embedded in the plastics material, so that the internal shell elements 13 clamp the pole in a torsion-proof manner between them.

The module half-shells 2, 3 are provided at the inside of the convex walls, which are shaped like a cylinder section, with transverse walls 16 and 17, which extend perpendicularly to the top and bottom walls 5, and longitudinal walls 18 and 19, which extend parallel to the top and bottom walls 5. The module half-shells 2, 3 are made in one piece, with the exception of the internal shell elements 13, in an injection moulding process.

As shown by Figure 1C, the convex walls 4 of the display module of Figure 1 comprise the public transport stop symbol in the shape of an H in a coloured panel, which is surrounded by circular rings of a different colouring. The individual coloured areas 20, 21, 22, 23 and 24 are made by forming these coloured panels over the entire wall thickness with a coloured plastics material in an injection moulding process. As this process is generally known, it need not be dealt with in detail here.

Rather than comprising information integrated into the convex wall face, the display modules of Figures 2C and 2D hold an arrangement, indicated diagrammatically in Figure 10, of a light guide plate 43, a protective plate 44 and an information film 45 printed, for example, with a timetable, these being held in boundary grooves 26 formed between a moulded-on boundary strip 27 and the external face of the convex wall 28. This arrangement is pushed from the right- or the left-hand side over the outside of the vaulted wall

28, engaging under the boundary strips 27. A fillet 29, which is vertical in the fitting position and shown scaled-up in Figure 4, is then positioned on the lateral boundaries on both sides, where it snaps into position. For this purpose the fillet 29 is provided with internal lugs 30, which engage behind recesses 31 in the lateral boundary regions of the module half-shells. It is also possible to screw on one fillet, while only the second one is snapped on in a removable manner to facilitate replacement of the films, or suspended at the top and screwed into position with a socket head cap bolt. The associated nut is in this case held in a torsion-proof manner by the half-shells.

The film 45 with the information on routing, the timetable or the like may also be covered by a relatively thick transparent film 32 having stepped boundary sections at the top and bottom, so that it also engages in the groove 26 and is flush with the outside of the boundary fillets 27.

The embodiments according to Figures 2 and 3 essentially only differ by the dimensions and by the number of internal walls provided for reinforcement. In the embodiment of Figure 2 four internal shell elements 13, which are semicircular in cross section, are disposed one above the other, these each engaging via lateral lugs in corresponding recesses 15, while two internal shell elements 13 are provided in the embodiment of Figure 3.

Figure 5 shows a shell element 33 which consists of a solid plastics body which comprises in the centre a locating face 12, which is semicircular in horizontal section, for the pole, laterally of this plane front faces 34 and at the top and bottom terminal faces 35 and 36, which are likewise plane. The back wall 37 may be plane or extend in vaulted fashion so as to adapt to the module half-shell. Quartz sand is partly embedded in the locating face 12.

Through-holes 38 extend through the lateral sections of the clamp element 33 for the insertion of screws, by means of which two clamp elements of this kind can be screwed together so as to embrace the pole. The second clamp element comprises internal threads at points corresponding with the through-holes 38. The two clamp elements 33 are assembled before being screwed into position by conical lugs 43 at one clamp element engaging in conical recesses in the other internal shell element, so that the two internal shell elements are exactly aligned with one another.

Elongate, rectilinear projections of a dovetail cross section are moulded onto the top side 35 and the underside 36 of the clamp element. These projections serve to fasten the associated module half-shell 2, which has correspondingly shaped, in the present case dovetail, grooves 40 at a corresponding point at the inside of the top and bottom terminal wall.

Once a pair of clamp elements 33 has been fastened to the pole with screws, a respective module half-shell 2 is pushed from both sides over the clamp elements 33, and the projections 39 engage in the grooves 40, so that the module half-shells are exactly aligned with the clamp elements 33. If the module half-shells are now screwed together stress-free, they are held at the clamp elements so as to be completely immobile in the predetermined position.

The clamp elements 33 also have at the top side and the underside a respective semicircular projecting collar 41, the boundary of which is provided with a tooth system 42, as shown by Figure 8. The tooth system is formed in a staggered manner at the top and the bottom collar such that the tooth system of the top collar meshes in mating fashion with the tooth system of the bottom collar when two clamp elements 33 are disposed one above the other so as to point in the same direction.

The clamp elements 33 are fastened in pairs to the pole such that the tooth system 42 of the respective bottom collar 41 of one clamp element 33 meshes in mating fashion with the tooth system of the top collar 41 of the clamp element 33 located underneath. This ensures that the clamp elements 33 and thus the module half-shell pairs positioned on the latter are at an exactly predetermined spacing from one another and point as accurately as possible in the same direction.

The clamp elements 33 are of the same colour as the pole. For the same reason the collars 41 which, when two clamp elements 33 are assembled, have a tubular shape, look like pole sections between the modules, so that they do not impair the appearance.

Figures 9A to 9C show a preferred embodiment of the clamp elements 46, which each comprise two clamp sections lying one above the other which are joined together in one piece via webs 47. The clamp sections are screwed together by means of screws 48 such that they surround the pole very tightly. Grooves 48 are located in the clamp sections between the pairs of screws, in which grooves pins of a hammer head-shaped cross section are introduced in mating fashion after the clamp elements have been tightened at the pole, which pins are moulded onto transverse ribs of the module half-shells. The latter are then screwed together so as to remain stress-free as a result of their top and bottom plane terminal walls overlapping while retaining an air gap.

A respective collar 40, 50 again projects at the top side and the underside of the clamp elements 46, which collars have recesses and projections which fit together in mating fashion, as already described in connection with the embodiment according to Figure 5. The collars consist, for example, of polycarbonate and are locked into the clamp

sections, which in turn preferably consist of glass-fibre reinforced polypropylene.

Figures 11A and 11B show an alternative method of fastening a display module. In this case two clamps 51 are tightened on the pole, these clamps being provided with two arms 52 which have a square cross section and which are introduced from the side into recesses in the display module which have square cross sections. The above-mentioned clamp elements 46 are fastened to the arms 52, on which elements the module half-shells are again positioned, whereupon these are easily drawn together by means of screws, without internal stresses occurring in the module half-shells.

According to a further proposal of the invention, a radio clock may be integrated into the timetable film, so that an observer always knows exactly what the time is.

Claims

1. Display module, to be fastened to a pole, for public transport stops or the like, which module consists of two module half-shells (2, 3) with dimensionally stable, convex external walls (4),
characterised by at least one clamp element (33), which can be firmly screwed to the pole,
and guide and fastening means (39, 40) at the - at least one - clamp element (33) and the module half-shells (2, 3), with the aid of which means the module half-shells (2, 3) can be pushed laterally onto the - at least one - clamp element (33) and exactly aligned with this, wherein the module half-shells (2, 3) can be screwed together.

2. Display module according to claim 1,
characterised in that the convex walls (4) of the module half-shells (2, 3) are curved uniaxially and shaped symmetrically with respect to the centre plane (31).

3. Display module according to claim 1 or 2,
characterised in that the two module half-shells (2, 3) essentially have an identical external shape.

4. Display module according to any one of claims 1 to 3,
characterised in that the wall face or module half-shell (2, 3) has the shape of a shallow circular arc and/or an elliptical section.

5. Display module according to any one of claims 1 to 4,
characterised in that the display modules are disposed at a spacing from one another on a pole.

6. Display module according to any one of claims 1 to 5,
characterised by a light guide plate (43) with at least one, preferably two boundary edges illuminated by light sources and a roughened external face, in front of which an

information carrier (45) is disposed.

7. Display module according to claim 6, characterised in that diode strips are used as the light source.

8. Display module according to claim 6 or 7, characterised in that grooves are formed in the boundary edge or boundary edges, in which grooves the diode strips are disposed.

9. Display module according to any one of claims 6 to 8, characterised in that an accumulator, which is housed in the display module, is used as the current source.

10. Display module according to claim 9, characterised in that the accumulator is charged by solar cells.

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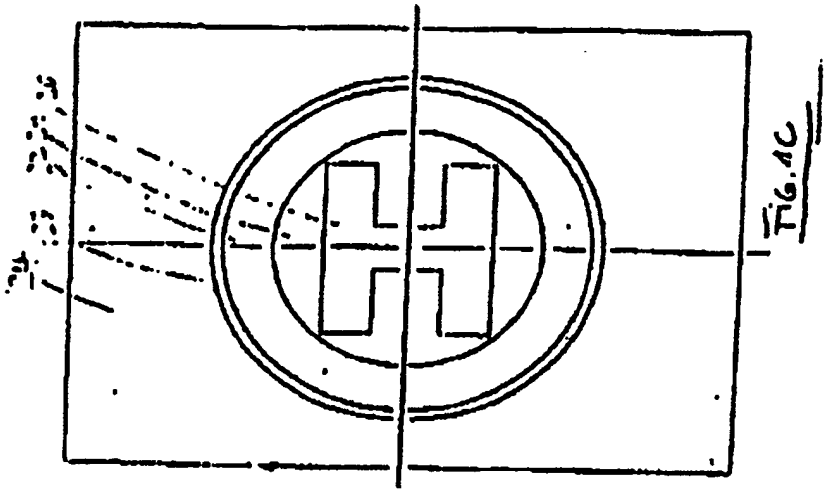

FIG.1C

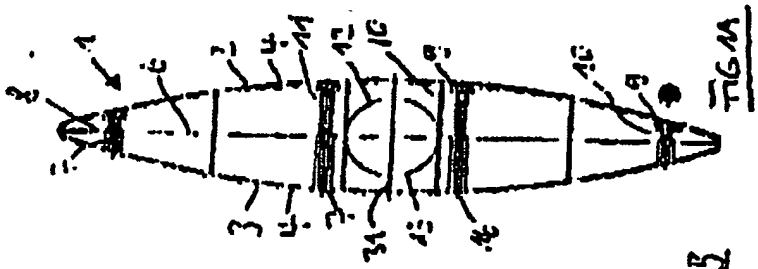

FIG.1A

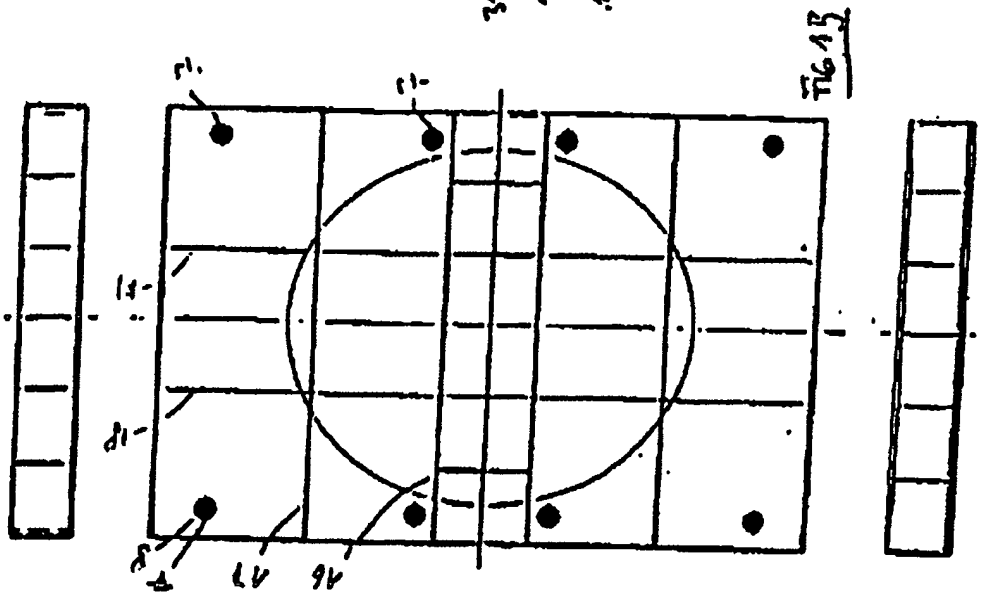

FIG.1B

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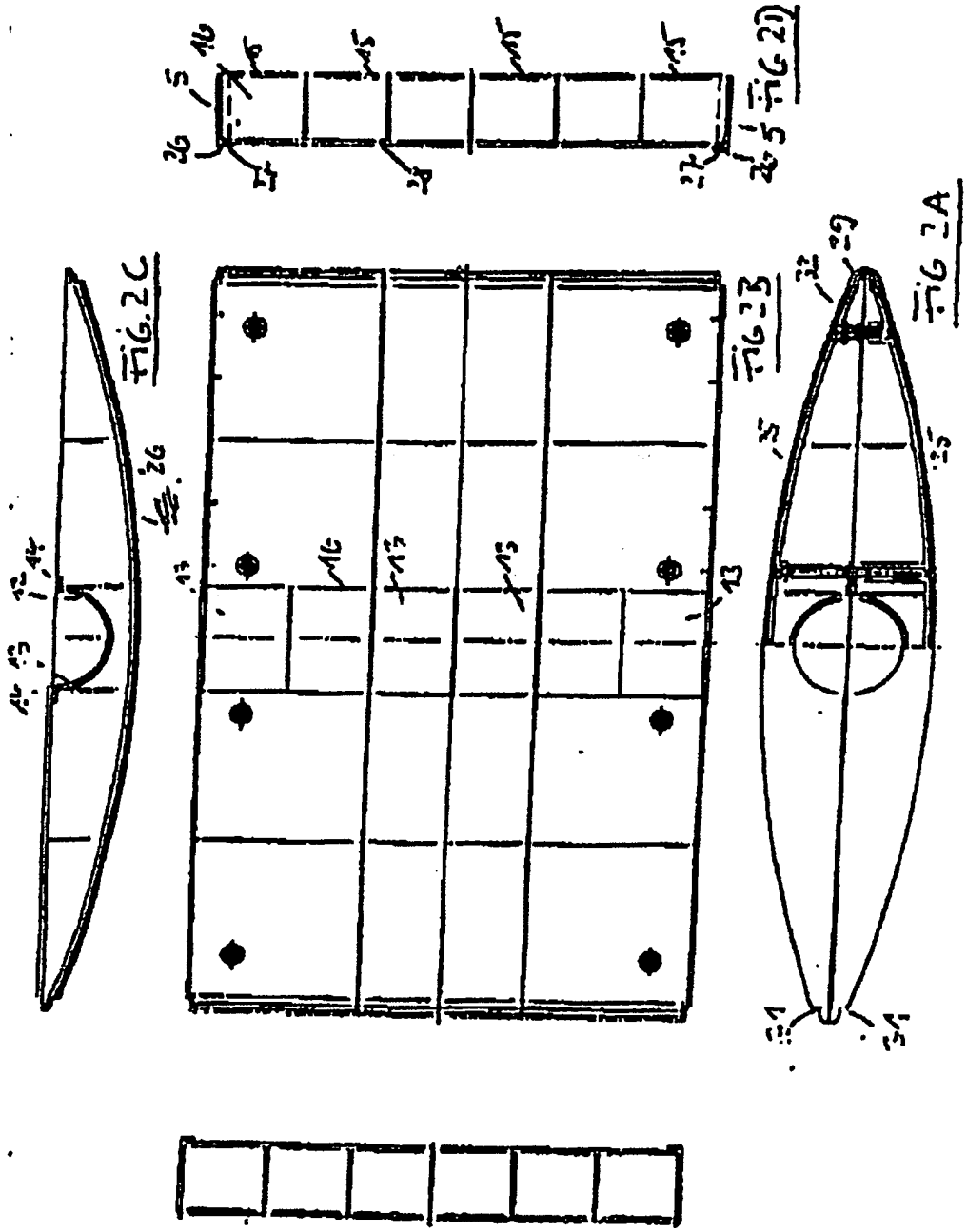

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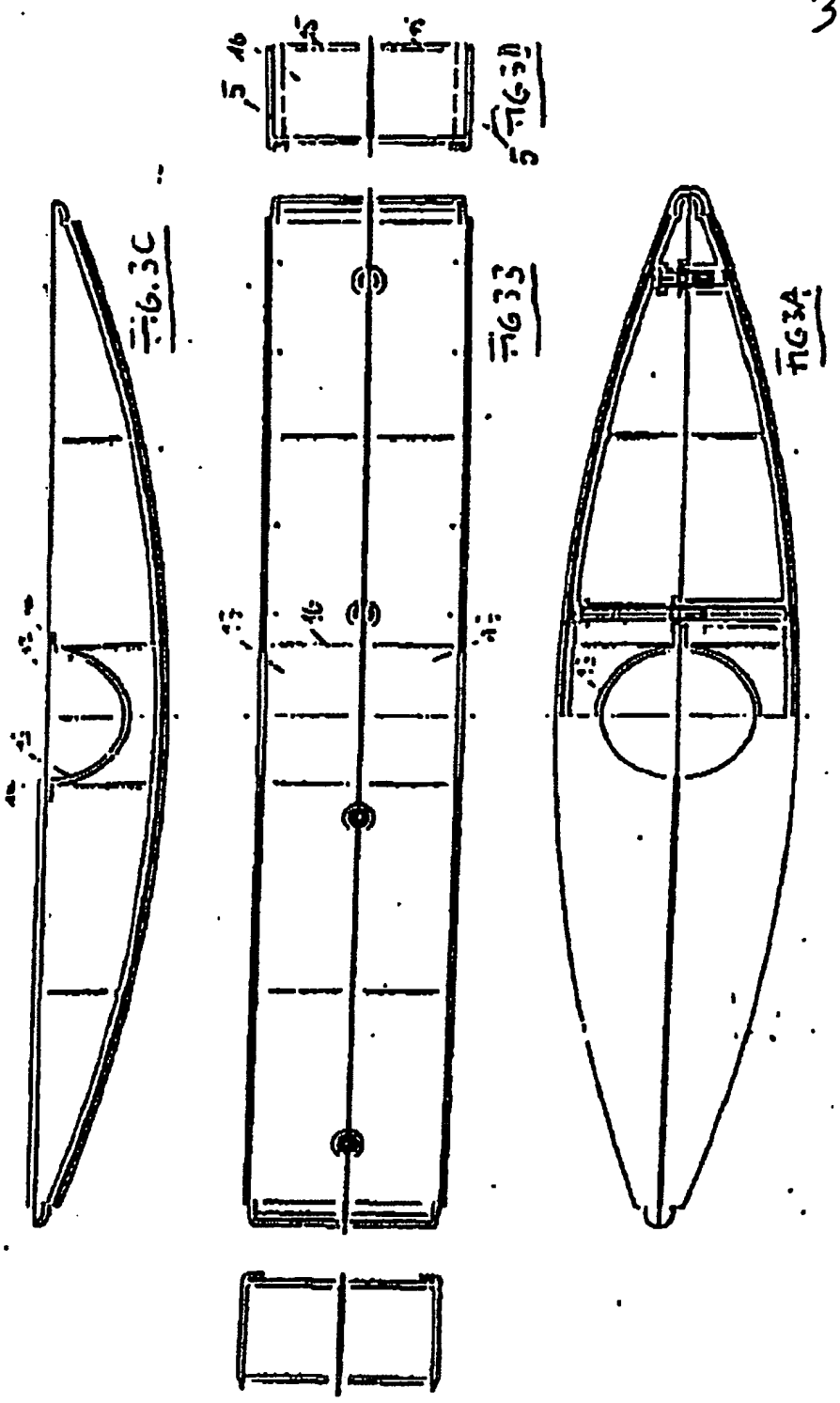

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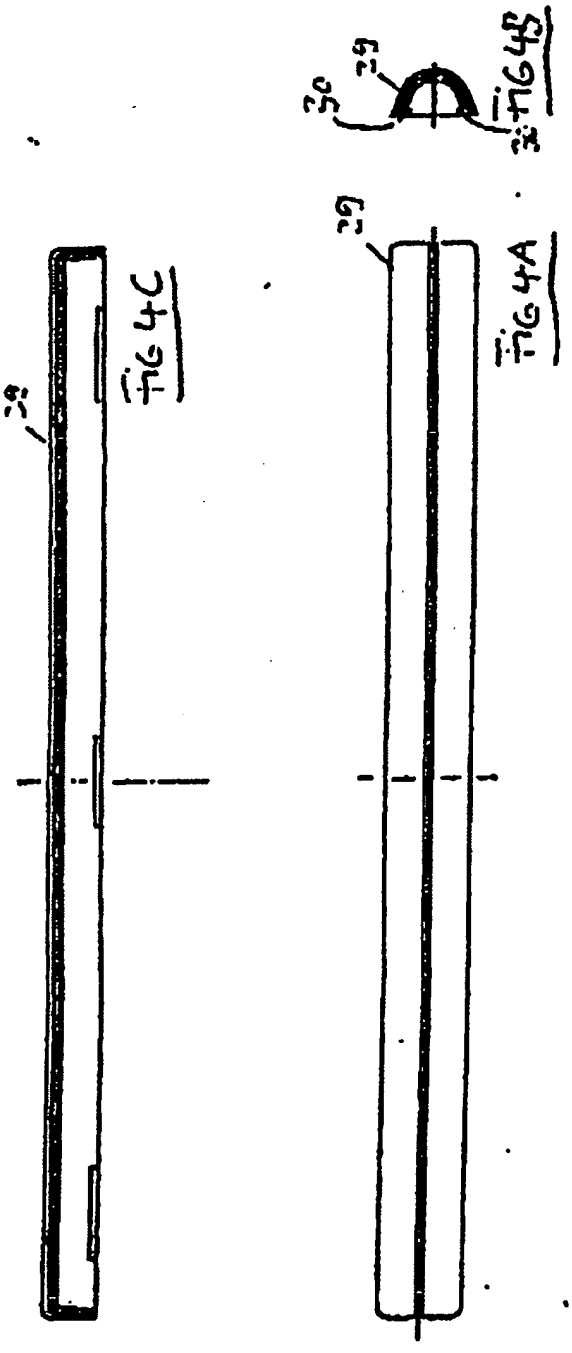


FIG. 5

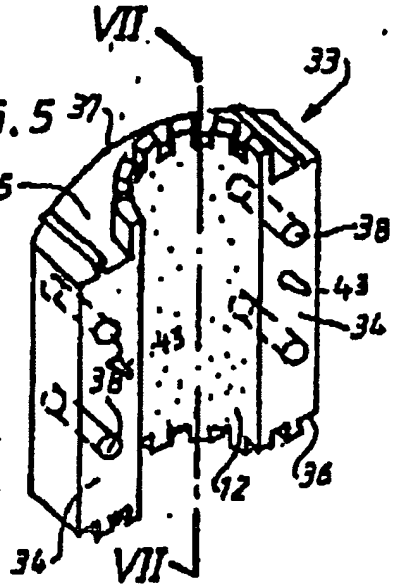
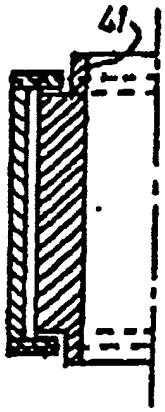


FIG. 7



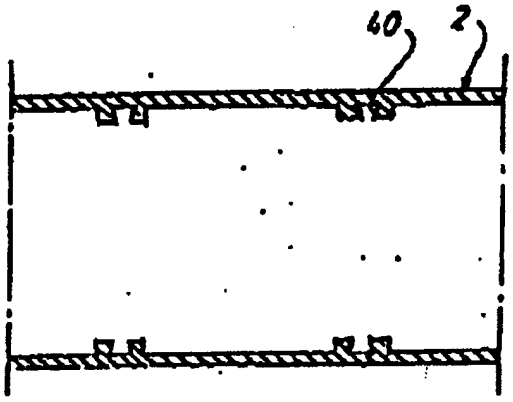


FIG. 6

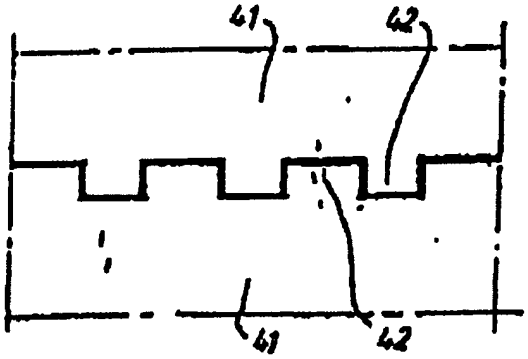


FIG. 8

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Fig 9C

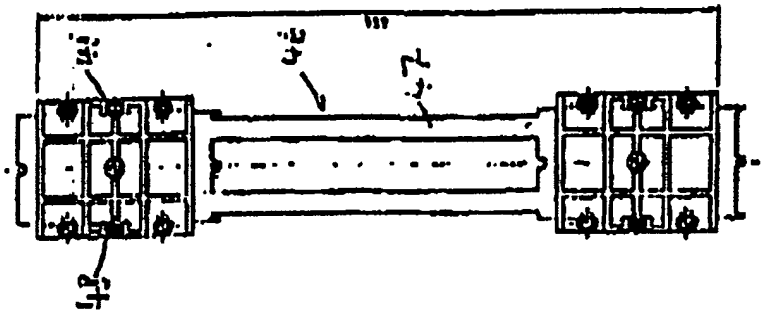


Fig 9B

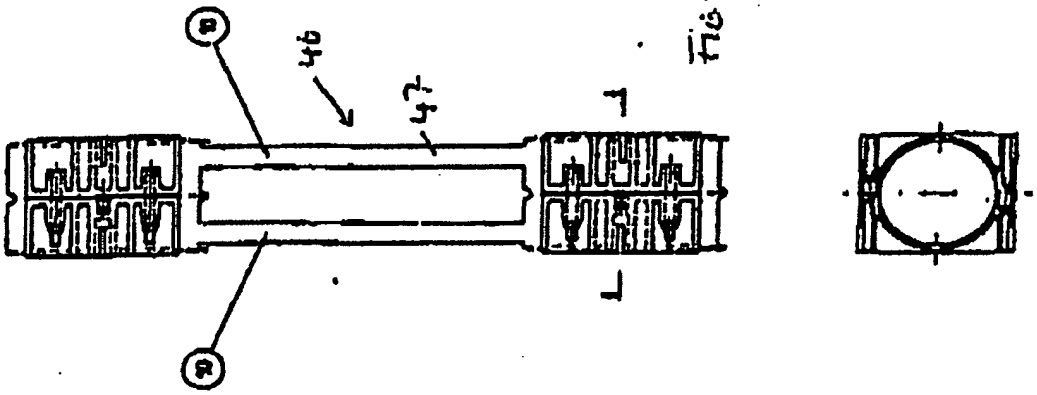


Fig 9A

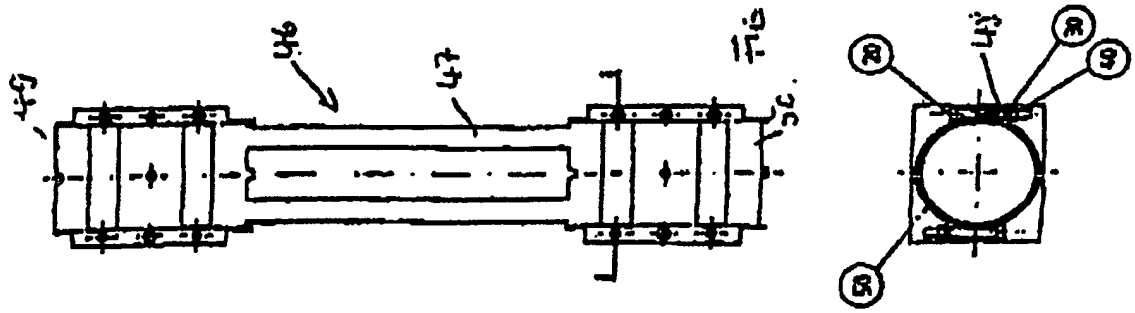


FIG.1A

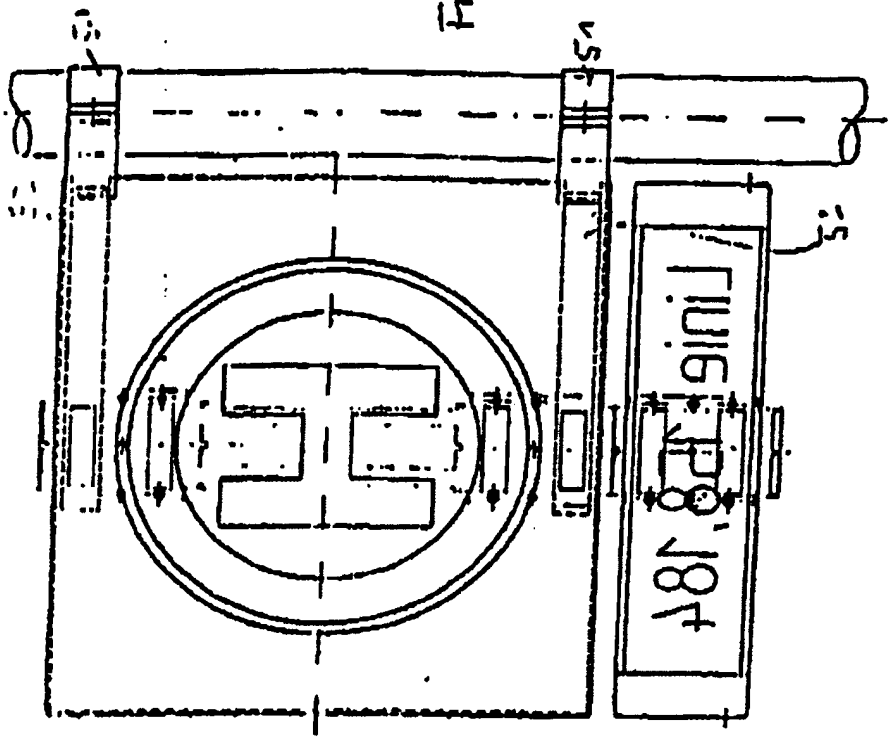
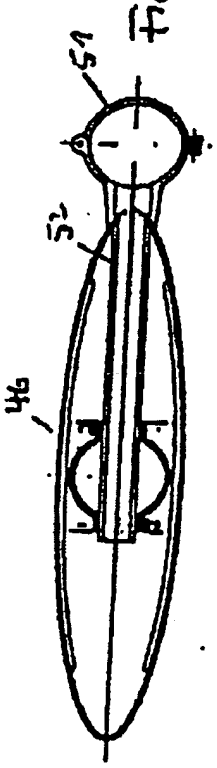


FIG.1B



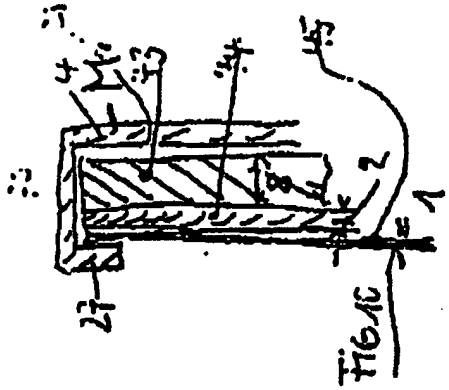


FIG.1C